

REMARKS

Claim 1-10 were pending in the application. Claims 1-10 have been amended. No claims have been added or cancelled. Thus, claims 1-10 remain pending and are resubmitted for consideration.

I. Information Disclosure Statement

An Information Disclosure Statement (hereinafter “IDS”) is being submitted herewith in order to include a copy of the reference listed in the non-patent literature section of the IDS filed on September 23, 2005. A copy of the reference is attached. The reference (JP 20022280288) was listed in the International Search Report for a related foreign application, a copy of the Search Report was included with the IDS of September 23, 2005. Applicants respectfully request acknowledgment of the reference.

II. Specification

The disclosure is objected to for informalities. Specifically, the Examiner states that the term “imposed” is used through the specification with double meaning. The specification, including the Abstract, has been amended as appropriate. Thus, Applicants respectfully request reconsideration and withdrawal of the objections to the disclosure.

III. Claim Objections

Claims 1, 2, and 5 are objected to for various informalities. Claim 1 has been amended to move the reference elements (5,6,8,9,15,16). Additionally, claim 1 has been amended to replace the phrase “the object (3,10)(3)” with the phrase “the object.” Claim 2 has been amended to replace “anobject” with the phrase “an object.” Claim 5 has been amended to remove the phrase “as claimed in any one of the preceding claims.” Applicants respectfully request reconsideration and withdrawal of the claim objections.

IV. Rejections Under 35 U.S.C. § 112

Claim 1 is rejected under 35 U.S.C. § 112 for being indefinite. Specifically, the Examiner states that the term “imposed” is indefinite. Claim 1 has been amended to delete

the term “imposed.” Claim 1 has been amended as appropriate. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection.

V. Rejections Under 35 U.S.C. § 102 - Isogai

Claims 1 and 3-5 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication No. 2002/0108239 (hereinafter “Isogai”). Independent claim 1 has been amended. The rejection should be withdrawn for at least the following reason.

A. The Claims

Amended claim 1 recites a method for calibrating displacement of an object in a coordinate system of at least one component placement device:

that comprises a camera, whereby the object having at least one reference element is brought into an image area of the camera, after which a first position of the reference element relative to the component placement device is determined from an image made by the camera, then the object is displaced relative to the component placement device, a second position of the reference element relative to the component placement device is determined from a second image made by the camera, after which a real displacement of the object relative to the component placement device is determined from the first and second relative positions, which real displacement is compared with the desired displacement, whereby a deviation between the real displacement and the desired displacement in X, Y and ϕ directions is taken into account by displacing another object with respect to the component placement device.

Claims 3-5 depend from amended claim 1.

B. Isogai

Isogai does not teach or suggest a method for calibrating displacement of an object in a coordinate system of at least one component placement device: (1) that comprises a camera and; (2) “whereby a deviation between the real displacement and the desired displacement in X, Y and ϕ directions is taken into account by displacing another object with respect to the device.”

Isogai discloses a method of detecting a position of a rotation axis of a suction nozzle of an electronic component mounting apparatus. In Isogai, a gauge is rotated and placed onto a substrate by a suction nozzle in order to determine the position of the rotation axis of the suction nozzle. *See* Isogai at ¶¶ [0029] to [0037]. The rotation axis of the suction nozzle is determined relative to *a substrate*. *See* Isogai at ¶ [0029].

Isogai does not teach or suggest a method for calibrating the displacement of an object whereby the object is displaced relative to a device that comprises a camera. Assuming, arguendo, that the suction nozzle (184) of Isogai is an “object” and the substrate (12) is the “device,” the suction nozzle (184) is rotated relative to the substrate (12). However, the substrate (12) of Isogai does not comprise a camera. Furthermore, Isogai does not teach that “the deviation between the real displacement and the desired displacement in X, Y, and ϕ directions” is taken into account by displacing another object with respect to the device. Another suction nozzle is not displaced with respect to the substrate (12). Therefore, rejection of claim 1 under 35 U.S.C. § 102(b) is improper. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 3-5 depend from claim 1 and are allowable therewith, for at least the reasons set forth above, without regard to the further patentable subject matter set forth in these dependent claims.

VI. Rejections Under 35 U.S.C. § 102 - Okamoto

Claims 2 and 7-9 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication No. 2001/0012985 (hereinafter “Okamoto”). Independent claim 2 has been amended. The rejection should be withdrawn for at least the following reason.

A. The Claims

Amended claim 2 recites a method for calibrating a plurality of component placement devices each having its own coordinate system:

whereby an object having reference elements is brought into an image area of at least two cameras of at least two component placement devices, after which first positions of at least one reference element are determined relative to the coordinate system of a first component placement device, second positions of at least one reference element are determined relative to the coordinate system of a second component placement device, after which the position of the coordinate system of the second component placement device relative to the coordinate system of the first component placement device is determined from the first and second relative positions of the reference elements.

Claims 7-9 depend from amended claim 2.

B. Okamoto

Okamoto does not teach or suggest a method for calibrating a number of component placement devices each having its own coordinate system in which “the position of the coordinate system of the second component placement device … relative to the coordinate system of the first component placement device … is determined from the first and second relative positions of the reference elements.”

Okamoto discloses a method of calibrating a camera mounted on a vehicle (mobile object 10) in which the positional relation between the vehicle and a target apparatus (30) is adjusted. *See* Okamoto at Fig. 17. In Okamoto, a vehicle (10) includes one or more target points (106) and cameras (101) to be calibrated. The target apparatus can include a target data obtaining means (114) and position calculating means (113). The positional relation

between the vehicle and target apparatus can be determined by comparing the position of target points in first and second coordinate systems in order to then calibrate the cameras (101). *See* Okamoto at Fig. 17 and ¶¶ [0015] to [0017]. Okamoto does not disclose component placement devices with each having their own coordinate system. Furthermore, Okamoto does not disclose a method of calibrating a number of component placement devices in which each component placement device comprises its own coordinate system and “the position of the coordinate system of the second component placement device … relative to the coordinate system of the first component placement device … is determined from the first and second relative positions of the reference elements.” Thus, rejection of claim 2 under 35 U.S.C. § 102(b) is improper. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 7-9 depend from claim 2 and are allowable therewith, for at least the reasons set forth above, without regard to the further patentable subject matter set forth in these dependent claims.

VII. Rejections Under 35 U.S.C. § 103 – Isogai & Kobayashi

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Isogai in view of U.S. Patent No. 5,692,070 (hereinafter “Kobayashi”). Claim 6 depends from claim 1. The rejection should be withdrawn for at least the following reason.

Isogai and Kobayashi, taken together or separately, fail to teach or suggest a method for calibrating displacement of an object in a coordinate system of at least one component placement device: (1) that comprises a camera; and (2) “whereby a deviation between the real displacement and the desired displacement in X, Y and ϕ directions is taken into account by displacing another object with respect to the device.”

As stated above, Isogai does not teach or suggest a method for calibrating the displacement of an object whereby the object is displaced relative to a device that comprises a camera. Furthermore, in Isogai, another suction nozzle is not displaced with respect to the substrate (12).

Kobayashi fails to cure the deficiencies of Isogai. Even if, assuming arguendo, that Kobayashi teaches an object is a plate on which a number of marking elements serving as reference elements are provided as suggested by the Examiner, the combination of Isogai and Kobayashi still fails to teach or suggest a method for calibrating displacement of an object in a coordinate system of at least one component placement device: (1) that comprises a camera; and (2) “whereby a deviation between the real displacement and the desired displacement in X, Y and ϕ directions is taken into account by displacing another object with respect to the component placement device.” Thus, the rejection of claim 6 under 35 U.S.C. § 103 is improper. Applicants respectfully request reconsideration and withdrawal of the rejection.

VIII. Rejection Under 35 U.S.C. § 103 – Okamoto & Kobayashi

Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Okamoto in view of Kobayashi. Claim 10 depends from independent claim 2. The rejection should be withdrawn for at least the following reason.

Okamoto and Kobayashi, taken together or separately, fail to teach or suggest a method for calibrating a number of component placement devices each having its own coordinate system in which “the position of the coordinate system of the second component placement device … relative to the coordinate system of the first component placement device … is determined from the first and second relative positions of the reference elements.”

As stated above, Okamoto does not teach or suggest a method for calibrating a number of component placement devices in which “the position of the coordinate system of the second component placement device … relative to the coordinate system of the first component placement device … is determined from the first and second relative positions of the reference elements.”

Kobayashi fails to cure the deficiencies of Okamoto. Even if, assuming arguendo, that Kobayashi teaches an object is a plate on which a number of marking elements serving as reference elements are provided in a grid pattern as suggested by the Examiner, the combination of Okamoto and Kobayashi still fails to teach or suggest a method for calibrating

a number of component placement devices each having its own coordinate system positioned in which “the position of the coordinate system of the second component placement device ... relative to the coordinate system of the first component placement device ... is determined from the first and second relative positions of the reference elements.” Thus, the rejection of claim 10 under 35 U.S.C. § 103 is improper. Applicants respectfully request reconsideration and withdrawal of the rejection.

IX. Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application, as amended, is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is believed that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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